

We pass over many passages we had marked, with saying that in many cases the objections are sound but trivial. Objection is taken to Mr. Wilson's remark, "Every theorem may be shown to be a means of indirectly measuring some magnitude," and Niemand abandons "every." We think, however, that Niemand might have made a better fight of it and suggested that what is intended is that, for instance, all the theorems of the first book are directly or indirectly required for the proof of the 47th Proposition, which is surely a proposition concerned with the measurement of magnitude.

On p. 177 Minos says of the exercise, "Show that the angles of an equiangular triangle are equal to two-thirds of a right angle. In this attempt I feel sure I should fail. In early life I was taught to believe them equal to *two right angles*—an antiquated prejudice, no doubt; but it is difficult to eradicate these childish instincts." Mr. Dodgson was taught that the *three* angles were equal to this magnitude; the question says "angles" surely in the plain sense of each angle being equal, &c. Again, in the construction for proposition corresponding to Eucl. i. 9 objection is taken to "finding a radius greater than half AB " (it should be AC): "it would seem to require the previous bisection of AB " (AC). Thus the proof involves the fallacy "*Petitio Principii*." Surely one can take a line greater than or equal to AC ; where, then, is the fallacy? Exception is taken to the proposition "the area of a trapezium is equal to the area of a rectangle whose base is half the sum of the two parallel sides, and whose altitude is the perpendicular distance between them" as being "a mere 'fancy' proposition of no practical value whatever." We have met with it in works on co-ordinate geometry and elsewhere. Then again the theorem (Apollonius's) on Mr. Wilson's p. 95 is branded "new," "but even with that mighty name to recommend it, I cannot help thinking it rather more curious than useful." It is our own impression that it is one of the most important "riders" from the second book, and if Mr. Dodgson has been teaching geometry for nearly five-and-twenty years, so have we—but we do not confine our teaching to the text-book only, we devote a great part of our geometrical teaching time to the working of exercises.

Our conclusion from the examination of Mr. Dodgson's objections to Mr. Wilson's last book is that the majority of them can be easily met; indeed, many of them are mere verbal quibbles; the rest arise from the very different standpoints taken up by the two writers, and here there is likely to be "war to the knife."

A word or two on Morell's (J. R.) "Euclid Simplified." It is very easy work to pick this little book to pieces, but we cannot understand a statement of Mr. Dodgson's on p. 148. Of the proposition "Every convex closed line $ABCD$ enveloped by any other closed line $PQRST$ is less than it," he says the method used fails, "as of course all methods must, the thing not being capable of proof." We cannot call to mind any English text-book in which the proposition is proved, but there is what we have thought was a proof in Sannia and D'Ovidio's "*Elementi di Geometria*," p. 32.

We are bound to say that "Euclid and his Modern Rivals" is not all amusing reading. It alternates

"From grave to gay,"

and more than a third part is devoted to appendices, the third to the sixth of which (73 pages) must have cost the author a great deal of thought and labour. We fear, however, it will not get the attention it deserves. It is hard reading, and one has hardly been led up to it by the amusement provided in the four Acts of the Drama. Some little trouble is involved in mastering the symbols and their significance.

The fourth act considers the objections brought by Mr. Wilson ("Euclid as a Text-Book," &c.) and others against the use of Euclid for junior pupils on the score of unsuggestiveness and want of simplicity of style, the exclusion of hypothetical constructions, &c. We need not consider them here, but refer to two articles by the Rev. Dr. Jones ("On the Unsuitableness of Euclid as a Text-Book of Geometry," *Trans. of Liverpool Lit. and Phil. Society*, published in a separate form; and "Review of Mr. Todhunter's Essay on Elementary Geometry," (*Monthly Journal of Education*, 1875, pp. 97-112, 150-160), neither of which is referred to by our author, though he quotes largely in the appendix from Mr. Todhunter's Essay and also from a review of Mr. Wilson's first Geometry in the *Athenæum* for July 18, 1868, written by Prof. De Morgan. We could instance other geometries which have an equal claim to be considered with any of those criticised by Mr. Dodgson, and we should rather have written "Euclid and some of his Modern Rivals."

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

The Papau or Papaya

IN NATURE, vol. xix. p. 447, is a paragraph relative to the singular qualities of the *Carica papaya*. I cannot but think that some of the properties attributed to this vegetal in British Guiana by the natives of that colony are exaggerated somewhat, e.g., the tempering of steel by its sap, &c.

Sir Wyville Thomson, in the first volume of "The Voyage of the Challenger," gives a capital representation of a group of these papaw-trees in the garden of the Admiral commanding on the North American station at Clarence Hill, Bermudas, where they seem to abound; I do not know if these dioecious plants are indigenous to these islands or introduced from the West Indies and tropical America. From the cut above mentioned can be seen the quaint growth of these paradoxical trees, which must have been esteemed by the early voyagers, as they have been introduced into all parts of the tropics. The singular-looking straight stems (not unlike the gigantesque tree-cabbage stalks of the Channel Islands) are crowned with a tuft of digitate leaves, somewhat at a distance resembling those of the *Aralia papyrifera*, under which the clusters of black purple fruit protrude. In the islands of Bourbon and Mauritius they make a passable *compôte* of these fruit, which are pulpy and full of black seeds when ripe, and the Creole children eat them raw, with what effect on their insides I know not; the birds, however, will not touch them, and as they fall they rot on the ground beneath. In Mauritius, where we lived principally on ration beef cut from the tough flesh of Malagasy oxen, we were in the habit of hanging the ration under the leaves of the tree itself, and if we were in a hurry for a very tender piece of *filet*, our cook would wrap up the undercut of the sirloin in the leaves, when the newly-killed meat would be as tender as if it had been hung for a considerable time. Whence are these deleterious effects causing rapid decomposition of animal fibre? and are there any other trees which possess similar properties?

The Malabars, who were introduced into Mauritius as Coolies, would not sleep under tamarind trees, on account of their supposed noxious effects; but it is possible that superstition has something to do with their objection.

S. P. OLIVER

On the Origin of Certain Granitoid Rocks

DR. CALLAWAY'S interesting letter with the above heading in NATURE (vol. xx. p. 219) tempts me to send you the following paragraph from my paper in the *Quart. Journ. Geol. Soc.* for May, p. 286, in which the hälleflintas of the Arvonian there mentioned are first described:—

"The mode of behaviour of the quartz also here is particularly interesting and instructive in regard to the changes which many crystalline rocks have undergone, especially the gneisses. In some cases the quartz is seen in distinct fragments, but yet coalescing, as if attracted together by some natural affinity from the surrounding material. In the next place the grains are so compressed together (and yet distinctly fragmentary) that all other material is removed, and nests of pure quartz grains only are seen, having a very crystalline appearance. By this selective process also the darker material is brought together and made to fold round the nests, so that a banded or imperfect flow-structure is given to the rock. All this looks as if an incipient gneiss was being formed, the metamorphic action being incomplete, a kind of semi-metamorphism and softening having taken place sufficient only to allow the particles to arrange themselves according to their natural affinities."

It will be seen that the conclusions arrived at by Dr. Callaway in his recent examinations of similar rocks in Shropshire are almost identical with those previously formed by myself in Pembrokeshire. The careful microscopical examination of rocks of an intermediate type like these hälleflintas appear to be, cannot fail, I think, to clear up some of the difficulties hitherto experienced in endeavouring to explain the origin of many of the crystalline rocks.

HENRY HICKS

Hendon, July 4

Distribution of the Black Rat (*Mus rattus*, Linn.) in Italy

IT may interest the readers of NATURE to know that the black rat is very abundant and widely distributed in Italy and her islands. In the Central Collection of Italian Vertebrata which I have founded in the Florence Zoological Museum, I have a large series of specimens from no less than fifteen localities, viz., Domodossola, Casale, Florence, Radda, Arezzo, Castelfalfi, Lecce on the continent, Bastia (Corsica), Cagliari (Sardinia), Castelbuono Madonie (Sicily), and from the islands of Elba, Pianosa, Montecristo, Giglio, and Lipari. On the smaller islands the larger *M. decumanus* does not exist at all, but elsewhere the two species live side by side. In the Florence Museum we have *M. decumanus* in the cellars, and *M. rattus* upstairs. This proves that the black rat is very far indeed from extinction with us; I should say that it is generally more abundant in Italy than its larger congener, at least such is my experience.

I may add that we have two, if not three, very distinct varieties of *M. rattus*, viz., the typical black *M. rattus*, the grey and white *M. tectorum*, Savi, and the brown hirsute *M. alexandrinus*. The two former are positively one species, and I have them from the same litter; the latter is, I believe, generally admitted to be specifically identical with *M. rattus*.

HENRY H. GIGLIOLI

Royal Zoological Museum, Florence, July 4

Barbed Hooklets on Spines of a Brachiopod

MR. THOMAS DAVIDSON, F.R.S., describes, on p. 275, and figures, in pl. xxxiv. of the Supplement to his "Carboniferous Brachiopoda," now on the eve of publication, some important points in the structure of *Spirifera lineata*, Martin, which specimens in my collection have revealed. In this species the shell structure is minutely punctate, and the flattened spines, which are usually broken off short, contain in their interior a double canal, that terminates upon the outer surface of the shell in a series of double pores. I have recently been fortunate enough to find a specimen from the High Blantyre limestone shales having the spines in place. It appears that these spines are provided with numerous marginal opposite hooklets usually pointing

towards the free end of the spine. So far as I am aware, this structure is unique amongst the brachiopods. Mr. Davidson has kindly undertaken to note this interesting fact in the explanation of the plates of his forthcoming monograph, the text having been printed off before this observation was made; but I should like to draw the attention of palæontologists to the point, as perhaps similar structures may be found in other brachiopods. The materials are in Mr. Davidson's hands for extended notice when his leisure allows him.

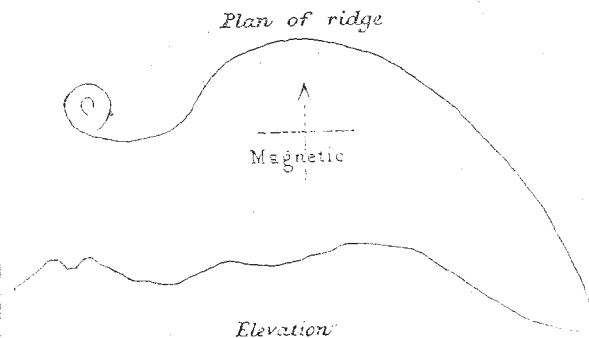
JOHN YOUNG

Hunterian Museum, Glasgow University, June

The Serpent Mound of Lochneil, near Oban

I WALKED over yesterday from here to examine this for myself. I started with some feelings of doubt as to whether it was not one of those fantastic shapes naturally assumed by igneous rocks, seen through the spectacles of an antiquarian enthusiast. I came away quite satisfied that it is an artificial shape, designedly given, and deliberately intended to represent a snake. It partly closes the entrance of a singular little rock amphitheatre with a waterfall at the head (the north end of it), the Loch being to the southward. There is a raised plateau to the northward of the serpent, nearly square. The ground is apparently a rubble of gravel, stones, and dirt, such as is found in moraines. The head of the snake had been opened, and showed a quantity of stones with some indication of a square chamber in the middle.

I do not pretend to any antiquarian knowledge. The impression that it suggested to me, on the spot, was that a party had endeavoured to entrench itself, at the spot, but had been attacked before the entrenchment was complete on more than one face, and that the rampart was then converted into the snake form to commemorate either a successful assault, or the successful defence of an unfinished work.



I inclose you a sketch plan and elevation, of a very rough kind, which I made on the spot and have not retouched since, except by inking over my pencil marks.

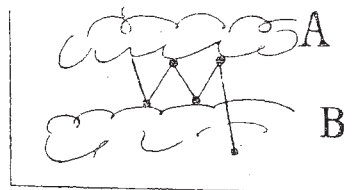
You have already (some years back), given a drawing and description of it. It should be stated that it is at the north-west corner of Lochneil, close alongside of the road from Oban to Callanach.

C. W. M.

Oban, June 19

The Origin of Hail

I SHOULD feel much obliged if any of your readers would kindly explain for me the following "explanation" of the origin of hail; which I have come across while reading for an examination:—



"Hail.—It consists of concentric layers of ice, and is caused by electricity. Imagine two clouds, A and B, charged with different fluids, and suppose that a drop of water falls from A. Its